The description in *La Nature* for June 16 of the equipment of one of the large German bombing aeroplanes made by the Gotha Wagonenfabrik and captured by the French in February shows that at that date these planes were only intended to drop bombs when moving with or against the wind, and not athwart it. The bomber sits in front of the pilot and is provided with a telescope about a metre long with a small magnification and a wide field of view. It is fixed in gimbals near his feet, and can be kept vertical by him with the help of a circular level, an image of the air-bubble of which is projected into the eyepiece. Below the objective an achromatic prism is placed with its refracting edge perpendicular to the axis of the telescope. By means of a graduated disc close to the eyepiece the prism can be rotated about a line perpendicular to the axis of the telescope, so that the line of sight of the telescope continues beneath the prism at any required angle up to about 30° with the axis of the telescope.

A stop-watch with its dial close to the eyepiece enables the preliminary speed observations to be readily made. The prism can then be clamped at the proper angle for the conditions found, and on looking down the telescope the bomber sees at each instant in the middle of the image of the air bubble and in the centre of his field of view the spot on which a bomb released at that instant would drop. If the aeroplane is moving directly towards a point in the air from which a given object can be bombed, the image of that object will move towards the centre of the field along a fore-and-aft line in the field. If the aeroplane is not moving directly towards the object, the observer has to rotate the telescope about a vertical axis to bring the object into the fore-and-aft line. The rotation of the instrument is recorded on a dial before the pilot, who alters the direction of flight until the observer can bring the telescope back to its normal position and the dial in front of the pilot shows no error of direction.

The instrument is made by the firm of Goerz, and there is no difficulty in modifying it so that the restriction of its use to flights with or against the wind no longer holds. Whether this has been found advisable may be doubted, in view of the uncertainty which always exists as to the character of the air movements between the aeroplane and the ground. C. H. Lees.

NOTES.

With reference to the paragraph which appeared in a recent issue of Nature regarding the Société de Chimie Industrielle, further particulars as to the scope of the new society appeared in *L'Echo du Commerce* for July 20. The object of the society will be to promote the science of chemistry as applied to industry. Local provincial branches will be formed which, while being self-governing, will keep in touch with the parent society at Paris. The society will institute research work with the view of assisting manufacturers and agriculturists. An institute and library are in contemplation which will contain a complete collection of French and foreign periodicals devoted to industrial chemistry, and the society hopes to arrange for meetings, exhibitions, etc., to stimulate activity. A review—the first number of which is expected to be published shortly—will keep manufacturers posted in the latest developments at home and abroad, describe inventions and processes, and, generally, fill a want that has been long felt in France. The first council of the society contains many names prominent in the scientific and industrial world.

For some days the firing in Flanders has been unusually heavy, culminating in the Allied attack on Tuesday, July 31. On Saturday last, July 28, according to a message from Amsterdam, the thunder of the guns reached a greater pitch of intensity than ever experienced previously. A similar remark is made by the Dover correspondent of the *Times* (July 30). The firing heard in that town was almost continuous throughout the night of July 28–29, and was particularly heavy about midnight and just before daybreak. A correspondent of the *Daily Telegraph* states that, on the afternoon of July 25, "while yet the hum of the London traffic was dominant, the sullen boom of the guns in Flanders was heard in many districts in South London. As the evening advanced the sound became a low growl, unmistakable, and practically continuous." The sound of the heavy firing on Tuesday was also heard distinctly in London.

The current *Quarterly Review* contains an article by Dr. C. Davison on his investigation of the sound-waves of the East London explosion of January 19 last. As stated in Nature for February 1 (p. 438), the sound-area consists of two detached portions. The inner sound-area is distorted in two main directions. Towards the east-south-east it reaches Canterbury, 48 miles, and to the north-west Wellingborough, 66½ miles; but to the north-east and south the boundary is only 19 or 20 miles from the source. The outer sound-area reaches from near Nottingham, across the south of Lincolnshire and Norfolk, to, and no doubt beyond, the east coast of the latter county. The most distant place at which the sound was certainly heard is Stow, near Lincoln, 128 miles. The width of the silent zone varies from 28 miles at the western and higher end to 48 miles at the eastern end. Speaking generally, the inner sound-area was one of single reports and the outer area one of multiple reports—two, three, and sometimes four reports being heard in quick succession. The existence of inaudible air-waves was manifested by the shaking of windows and the disturbance of pheasants, and the arrival of these waves was not, as a rule, coincident with that of the sound-waves. Within 15 or 20 miles of the source the air-waves passed after the sound was heard, at greater distances usually before. The air-waves were not, however, confined to the sound-areas, for their effects were noticed at sixteen places within the silent zone, nine of them being in the narrow western portion. The sound was heard at Ipswich, which lies a few miles from the northern boundary of the silent zone, and possibly also at Uppingham and Lilford, near the western end. It is inferred that both the inaudible air-waves and the sound-waves crossed the silent zone at moderate heights above the ground, but that the air-waves followed a lower path than the sound-waves.

Early in July Mr. Erik Andersson, of Uppsala, again led to Spitsbergen a geological expedition, which included Messrs. Adam Reuterskiöld, Sven Ydén, and Karl Samuelsson. The main object was to continue the investigation of the Trias and to collect saurians and fishes. The occurrence of phosphorite at Cape

Thordsen was to be investigated, as well as the extent of the coal beds at Pyramid Hill and Bünsowland. Investigations in the Devonian rocks are to be continued and their vertebrate fossils collected. A large expedition of miners and mining engineers also left Sweden about midsummer to exploit the Coal Measures of Spitsbergen, and was accompanied by Dr. Anteus as geologist.

THE Committee of the Privy Council for Scientific and Industrial Research, on the recommendation of the Advisory Council and at the request of the Home Office, has sanctioned the appointment of a committee with the following terms of reference:—"To inquire into the types of breathing apparatus used in coal mines, and by experiment to determine the advantages, limitations, and defects of the several types of apparatus, what improvements in them are possible, whether it is advisable that the types used in mines should be standardised, and to collect evidence bearing on these points." The members of the committee are:—Mr. W. Walker, Acting Chief Inspector of Mines under the Home Office (chairman), Dr. J. S. Haldane, and Dr. H. Briggs. Mr. A. Richardson has been appointed secretary to the committee, and Dr. H. Briggs has been constituted director of the inquiry.

AT the representative meeting of the British Medical Association held on July 26, the council reported that the only possible method of placing the health administration of the country on a sound basis was by the creation of a Ministry of Health. The recommendations of the council were as follows:—That a Ministry of Health should be created to take over from existing Government Departments such duties as are concerned with the health of the community, and to deal with those duties only; that the administrative functions of the Ministry should be carried out by a Board presided over by a Minister of Cabinet rank; that the country be divided into suitable administrative areas under local administrative health centres consisting of representatives (*a*) of the rating authorities; (*b*) of the education authorities; (*c*) of the persons contributing to a scheme of health insurance (including employers of labour); (*d*) the medical profession; (*e*) public hospitals; (*f*) dentists; (*g*) pharmacists; and (*h*) nurses; that the principal medical officers of each centre should be two, of equal status, one representing the clinical side (chief clinical officer) and the other the preventive side of medicine (medical officer of health); that for each area, hospitals, clinics, or treatment centres should be recognised or established at which persons entitled to treatment under the public scheme should be able to obtain institutional, consultative, or specialist services on the recommendation of their medical attendant. The meeting approved of the appointment of a Ministry of Health by a large majority.

NEWS of the American Crocker Land expedition is published in *Science* for June 29 from information supplied by Dr. H. J. Hunt, surgeon of the expedition, who arrived in New York on June 20 from Greenland *viâ* Copenhagen. The expedition was at Etah in northern Greenland when Dr. Hunt left it last December. He reports that it had enough provisions to last until about August 1 this year, after which it must depend upon walrus and caribou. However, the relief steamer *Danmark* was at North Star Bay, a sledge journey of about 150 miles from Etah, so there should be no fear of the expedition starving. The *Danmark*, when Dr. Hunt left her, was frozen in and short of coal, but had ample stores. She will probably get free from the ice this summer, but in order to ensure the safety of the explorers, the *Neptune* has been chartered and sent north under Capt. R. A. Bartlett. Dr. Hunt, in his journey to the Danish settlements of Greenland, had to sledge 1400 miles between December 18, 1916, and April 16 of this year. Part of the way he was accompanied by the Danish explorer, Knud Rasmussen. Eskimo were with him throughout the journey. The expedition, which is under the leadership of Mr. D. B. Macmillan, reports a considerable amount of work, especially geological. Seismological observations have been taken at Etah.

THE Trematode, *Schistosoma* (*Bilharzia*) *mansoni*, occurs frequently in man in Venezuela; adult specimens of this parasite were found by Dr. Risquez (1916) during post-mortem examinations in the School of Medicine at Caracas in 20 per cent. of the cases. Drs. Iturbe and González have recently published, from the laboratory of the former, an account (8 pp., two plates) of experiments made with the view of finding the intermediate host of this parasite in the neighbourhood of Caracas. The four common fresh-water "snails" of that area are two species of Planorbis, an Ampullaria, and a Physa, and the first three can be infected experimentally by adding to the water in which they are living the ciliated larvæ, or miracidia, of *S. mansoni*, but it is evident that *Planorbis guadelupensis* is the only species which naturally serves as the intermediate host of *S. mansoni*. The development of the miracidium in this Planorbis, and the formation of rediæ (described as having a widely open mouth and a rudimentary gut) and cercariæ, are in accord with the account by Miyairi and Suzuki of the corresponding stages of *S. japonicum*. The cercariæ of *S. mansoni*, after escaping from the infected Planorbis, can live in water for at least twenty-four hours. Experiments on white rats and on young rabbits and dogs showed that they acquire the parasite by the entry of cercariæ by the mouth or through the skin, though the actual penetration of the skin by the cercariæ was not observed. Naturally infected *Planorbis guadelupensis* were found in six of the seven localities examined near Caracas, and of 400 specimens from one of the canals 120 proved to be infected.

Two interesting and timely contributions on experimental work at the South-Eastern Agricultural College, Wye, furnish the main features of the June issue of the *Journal of the Board of Agriculture*. Prof. E. S. Salmon summarises the results of several years' experiments in potato-spraying with Bordeaux and Burgundy mixtures at the college in an article which, by the results quoted and the accompanying photographs, is calculated to remove the last doubt as to the economic soundness of the practice. In each of the five years the sprayed crops produced, not only an increase in the yield of tubers ranging from one ton to five tons per acre above the yield of the unsprayed crops, but the proportion of "ware" and of sound tubers was also markedly superior. The results further indicate that spraying is only effective when applied before the appearance of the "blight," and that the benefits of an early spraying can be substantially increased by a second spraying. Wet spraying proved superior to dry spraying in the one comparison made.

DR. J. VARGAS EYRE and Mr. S. T. Parkinson contribute to the June issue of the *Journal of the Board of Agriculture* a report on an inquiry carried out at Wye into the possibility of conserving surplus plums by drying. The investigations cover the preliminary treatment of the fruit to facilitate drying, the relative merits and efficiency of hot-air and vacuum drying, and the final treatment of the dried product to render it more attractive. The best results and most speedy drying were obtained with the vacuum machine and at a temperature of 70° to 80° C. The most effective preliminary treatment was to expose the plums to the vapour of chloroform whereby the rate of drying was appreciably reduced and a somewhat superior product obtained. A substantial improvement in the quality of the product was obtained by heating the dried plums in a limited quantity of steam in a closed vessel for a few hours. Further articles of interest in the same issue of the *Journal* are an account, by Mr. G. P. Berry, of studies of pollination problems carried on in cherry orchards in Kent, and a summary by Miss W. Brenchley of observations made at Rothamsted on the viability of buried weed seeds.

MR. S. HIBINO, in vol. xxxix. of the Journal of the College of Science, Tokio, has made some observations on the effect of "ringing" the stem of *Cornus controversa.* In these experiments either the cortex alone, or the cortex together with the outer layer of wood, was removed. One of the effects of ringing is to cause a development of anthocyan in the leaves, not only above, but also below, the seat of injury. The leaves also, especially if the wood is injured, gradually lose their colour and fall earlier than normal ones. The water content of the leaves of a "ringed" tree gradually decreases, the uppermost leaves being the first to be affected. The leaves above the position of ringing contain more starch and show a much greater diastase activity and a larger content of reducing sugar, also an excess of oxydase and peroxydase. The buds of ringed trees unfold their leaves much later the next spring than do those of normal trees; on the other hand, the ringed plants flower earlier and more freely than normal ones, and produce a bigger crop of fruit. Immediately below the seat of injury there is a marked development of adventitious shoots.

IN the July issue of *Man* Sir D. Prain endeavours to decide the geographical diffusion of kava and betel. The former, an infusion of *Piper methysticum,* is said by Drake del Castillo to occur spontaneously and as a cultivated plant in the Society and Marquesas Islands. But it has to be kept in mind that such a plant may be spontaneous without being necessarily native, and we have no record save that of Drake as to its having been found in a wild state. It is not wild in the Sandwich Islands, and it seems to be only a cultivated plant in Fiji, while it is said not to be known in those islands which are inhabited by Papuans. The case of betel (*Piper betel*) is not so uncertain. It clearly came to India from the Malay Peninsula, but it is doubtful if it is a true native of Java It is said to be wild in Celebes and probably in the Moluccas—an interesting point, because these islands lie east of the "Wallace Line," and from the botanical point of view all east of the "Wallace Line" is Papuasia, though it is more usual to consider Celebes and the Moluccas as integral portions of Malaysia. The result of the inquiry is that betel is of Papuasian origin, and that its use spread thence westward to Malaya proper, and from there to India; while kava is of extra-Papuasian origin, though where that origin is to be sought is far from certain. All that can be said with safety is that the probabilities point to Polynesia.

IN the *Meteorological Office Circular,* No. 13, attention is directed to the official substitution of the names "Richmond" and "Cahirciveen" for Kew and Valencia Observatories respectively. The auxiliary sunshine station which has been called Richmond in the Monthly Weather Report will be known as Richmond Hill. It is of interest to note that Valencia Observatory was originally on Valencia Island, but was moved to Cahirciveen in 1891.

THE *Jahrbuch des Norwegischen Meteorologischen Instituts* for 1916 has been published. This useful volume contains detailed observations at the observatories of Christiania and Aas, a summary of the year's observations at twelve stations, and the yearly and monthly means of all the stations in Norway. In addition there is an appendix giving the detailed pressure, temperature, and other readings at Green Harbour, Spitsbergen (lat. 78° 2′ N., long. 14° 14′ E.), from September, 1915, to June, 1916.

RECENT monthly and annual results of magnetical, meteorological, and seismological observations, made at the Royal Alfred Observatory, Mauritius, under the directorship of A. Walter, give valuable data for the several elements of specified branches of work. Observations are brought into line with the change of units now generally adopted in this and other European countries, except that for meteorological results the temperatures are given in degrees Centigrade, and to obtain temperatures in Absolute scale 273° have to be added. This method of giving temperature results has much in its favour, and little exception can be found provided that the method adopted is always clearly stated. The magnetical and meteorological observations in the monthly results are given for each hour, and the range in the various elements affords material of value for the inquirer. A table of monthly rainfall is given for about 150 stations in the island. As 1915 closes the eighth quinquennial period of observations, the annual report gives the monthly and yearly normals of the meteorological elements for forty years. Modern units are employed. Attention is directed to a marked periodicity with an interval of about eighteen and a quarter years between successive maxima in certain elements, and a more detailed discussion of the forty years' records is promised. More information on methods employed would enhance the value of results and would prevent possible misunderstanding; for instance, the table of results for forty years bears no evidence that the atmospheric pressure observations are uncorrected for height above sea-level, 181 ft., or that all other corrections have been applied, but the system generally adopted can be culled from parts of the monthly publications.

AT the meeting of the conference of delegates of the Corresponding Societies of the British Association held in London on July 5 Mr. T. Sheppard was asked to open a discussion on the metric system, as showing the need for some such scheme in the interests of the advancement of science. Mr. Sheppard gave an account of the various specimens of money scales and weights in use from early Greek and Roman to Victorian times. By far the finest collection of these money scales in the country, consisting of more than 200 varieties of boxes, now in the Hull Museum, was brought together by Mr. Sheppard, with the help of Mr. J. F. Musham, of Selby. The lecturer dealt with the absurdities of the system of weights and measures, illustrated, as regards money weights, by a series of specimens from the Hull collection. A long discussion ensued, which was continued on the following day. Mr. Sheppard's paper will be printed *in extenso* in the annual report of the British Association.

THE Canadian Department of Mines has issued the annual report on the mineral production of Canada for the year 1915, and it is satisfactory to note that, in spite of the adverse conditions necessarily created by the war, the mineral industry is in a flourishing condition. Although the value of the production has not reached the high record of 1913, it nevertheless shows an increase of 6·4 per cent. over that of 1914, this increase being, however, by no means uniform all round. There have been considerable decreases in the production of such building materials as clay, lime, sand, etc., whilst the quantities of all the metals produced, with the sole exception of silver, show marked increases; the increase in the output of pig-iron produced from Canadian ores amounts to nearly 63 per cent., and in the output of copper to 33 per cent. Of non-metallic minerals, coal is still by far the most important, its value being returned as 23·42 per cent. of the total value of all Canadian mineral products; the output, practically 13¼ million (short) tons, shows a trifling falling off from the output in 1914; this decrease appears to be entirely due to shortage of labour. In this connection, attention may be directed to Bulletin No. 14, recently issued by the department, on "The Coalfields and Coal Industry of Eastern Canada," which gives an excellent account—historical, geological, technical, and economic—of the coalfields of the maritime provinces. The important part that these coalfields are playing in the industrial development of Canada is well brought out in this useful monograph.

IN the Christiania *Forhand*, 1907, Prof. C. Størmer gave a theoretical discussion of the motion of an electron round a centre of force from which a magnetic and also an electrostatic field originated, a problem which has also been treated by Principal Hicks in the Proc. Royal Soc. (vol. xci., A). In a publication recently received, "Sur un Problème relatif au mouvement des Corpuscules Electriques dans l'espace cosmique" (Christiania: Videnskabssel Rabets Skrifter, 1917), Prof. Størmer gives a series of numerical calculations of orbits about a magneto-electric centre. Obviously orbits of given energy must be confined to surfaces of revolution about the magnetic axis. Diagrams and photographs of these surfaces are given in profusion, the latter being obtained by photographing the rapid rotation of a whitened wire bent to the shape of the generating curve. The title of the memoir is somewhat misleading, for it is purely mathematical, and there is no discussion of the bearing of the results obtained upon the problem of the motion of electrons in cosmic space.

THE paper on dielectric losses in insulating materials read before the American Institute of Electrical Engineers in March by Mr. C. E. Skinner, of the research department of the Westinghouse Company, is published in full in the June number of the Journal of the Franklin Institute. The material is tested either in sheets or when built into the transformer or alternator in which it is used It is subjected to an alternating voltage up to 50 kilovolts at a frequency of 25 to 60. The power absorbed by the insulator is measured by the quadrant electrometer wattmeter method, the difference of potential between the needle and quadrants of the electrometer depending on the voltage applied to the specimen, while the difference of potential between the pairs of quadrants is proportional to the current taken by the specimen. The curves for the various materials given in the paper show that the power absorbed by the dielectric is equal to the product of a constant into the nth power of the voltage applied. The value of n is not given, but from the curves it appears for a given material to be nearly independent of the temperature and of the frequency of the alternations, while the constant depends on both these quantities.

A PAPER on "The Action of Chemical and Physical Agents on some Types of Scientific Glassware," by J. D. Cauwood, S. English, and W. E. S. Turner, was read at the meeting of the Society of Glass Technology held in Manchester on July 25. Soon after the outbreak of war, chiefly owing to the insistent demands of the Sheffield steel works' chemists, steps were taken to promote the manufacture of high-grade chemical ware in this country. How well the glass manufacturers have risen to the occasion is shown by the results given in the paper, for it appears that glasses have been produced as good as, if not better, in some respects, than, the best German glasses. The method employed in the research had been to subject Jena glass, five new British resistance glasses, and a few chemical glasses made in Allied and neutral countries to a series of fourteen definite tests. In every test applied the British glasses compared most favourably with Jena glass, in some of the tests even surpassing it.

PROF. J. SEBELIEN, of the Norwegian Agricultural High School of Aas, has recently (*Tidsskr. for Kemi, Farmaci og Terapi*, Nos. 5–8, 1917) published the results of a comparative examination of chemical glass and porcelain ware and of filter paper from various sources. It would appear that owing to the war the former German monopoly is also threatened in neutral laboratories. The Swedish glass of the Limmared works compares favourably with Jena glass as regards resistance to chemical reagents, particularly to potassium hydroxide, which dissolves considerable quantities of silica and of boric acid from Jena glass. The laboratory porcelain of the Royal Porcelain Works at Worcester was found to be quite as good as that of the Berlin factory; both these are superior to the Haldenwanger and the Bayeux products. The author confirms the findings of the National Physical Laboratory with regard to the Worcester porcelain, which is slightly less resistant to heat changes than that manufactured in Berlin, and slightly more resistant to chemical reagents. Munktell's Swedish filter paper was found superior to others tried as regards low ash content and uniformity, some of the German kinds showing considerable variations. The Whatman papers compare favourably with the German makes, the excellence of which is by no means so exclusive as the makers would suggest. With respect to chemicals, Norway appears to have been almost absolutely dependent on imports from Germany, but some substances are now being manufactured. The author points out that the war has taught Great Britain to free herself from Germany in the matter of pure laboratory reagents, and expects that after the war these will be obtainable in his country at the same prices as the German products.

Engineering for July 27 contains an account, with drawings, of the wooden ships which are being built in the United States in order to compensate for the war losses in the mercantile marine without making great demands on steel, which is required in ever-increasing quantities for war munitions. The specifications for the ships illustrated were prepared by Mr. Theodore Ferris, the naval architect of the United States Government Shipping Board. The vessels are of the single-deck type, 281 ft. 6 in. long, 46 ft. beam, and 26 ft. moulded depth. The total estimated dead-weight is 3500 (long) tons; the sea speed, loaded, will be 10 knots, and two 3-in. guns will be carried. Four caulked watertight wooden bulkheads extend to the upper deck, forming two cargo holds and the machinery space. The propelling machinery may consist of one triple-expansion engine, or twin-screw reciprocating engines, or geared turbines, subject to the approval of the owners. The timber used in the construction of the vessels may be either dense southern yellow pine or Douglas fir, with stern-post, rudder-post, etc., of white oak. Wood knees will be of hackmatack or oak. Joiner sheathing and decks will be of cypress.

MESSRS. W. HEFFER AND SONS, LTD., Cambridge, have published a useful catalogue (No. 166) of scientific books, periodicals, and publications of scientific societies, which will be sent upon written application. It is conveniently classified under the headings of agriculture and husbandry· horses and horsemanship; botany; chemistry; geology, mineralogy, and palæontology; zoology, biology, and Nature-study; physiology, anatomy, and medicine (sub-section, dentistry); mathematics, physics, and engineering; and astronomy. It includes a selection from the library of Dr. L. C. Miall, and works on conchology and malacology, mainly from the library of the late Prof. H. M. Gwatkin.

SOTHERAN'S "Price Current of Literature" (H. Sotheran and Co., 140 Strand, W.C.2), No. 769, has just appeared under the appropriate title of "The History of Civilisation," seeing that it deals with works on anthropology, folk-lore, archæology, and sociology. It is a valuable catalogue, classified under the headings of general works, early and primitive man, and the dawn of civilisation—(*a*) Oriental and (*b*) Occidental—and contains particulars of the library of the late Sir Laurence Gomme.

A NEW and revised edition of vol. i. of Dr. G. McCall Theal's "History and Ethnography of Africa South of the Zambesi" is announced for immediate publication by Messrs. George Allen and Unwin, Ltd. The work covers the period from the settlement of the Portuguese at Sofala in September, 1505, to the conquest of Cape Colony by the British in September, 1795.

A CATALOGUE (No. 376) of books on architecture, art, archæology, etc., has just been issued by Mr. F. Edwards, 83 High Street, Marylebone, W.1.

OUR ASTRONOMICAL COLUMN.

COMET 1916*b* (WOLF).—The following is a continuation of Messrs. Crawfurd and Alter's ephemeris, of this comet for Greenwich midnight, as given in Lick Obs. Bulletin, No. 295:—

1917	R.A.			Decl.			Log Δ	Brightness
	h.	m.	s.	°	′	″		
Aug. 1	23	29	14	+22	10	13	0·0088	2·68
3		30	48	21	44	21	0·0065	
5		32	15	21	16	23	0·0043	2·68
7		33	33	20	46	20	0·0023	
9		34	44	20	14	14	0·0005	2·67
11		35	48	19	40	6	9·9989	
13		36	44	19	4	0	9·9976	2·65
15		37	32	18	25	58	9·9965	
17		38	14	17	46	5	9·9957	2·61
19		38	49	17	4	26	9·9953	
21		39	18	16	21	8	9·9951	2·55
23		39	41	15	36	17	9·9953	
25		39	58	14	50	2	9·9959	2·48
27		40	10	14	2	31	9·9968	
29		40	18	13	13	55	9·9981	2·39
31		40	22	12	24	23	9·9998	

The unit of brightness is that on April 21. An ephemeris by Dr. Kobold (*Ast. Nach.*, No. 4892) gives the magnitude of the comet during early August as 10·0. The comet will be in opposition on September 17.

VARIABLE PROPER MOTION OF δ CASSIOPEIÆ.—An investigation of the Pulkowa observations of the zenith star δ Cassiopeiæ has been made by L. Courvoisier in relation to Guthnick's discovery that this star is an eclipsing variable having a period of about 2·1 years (*Ast. Nach.*, 4891). It results from the discussion that there is a variation in the proper motion arising from the binary character of the star, and that the amplitude in declination of the two-yearly oscillation amounts to 0·04″±0·01″. The correction to the assumed value for the aberration constant, 20·47″, is +0·01″, and the deduced parallax of the star is +0·11″.

THE NEEDS OF ASTRONOMY.—The Astronomy Committee of the National Research Council of the United States has issued an interesting report on the most pressing needs of astronomy. The best immediate use of a fund for astronomical research is considered to be the provision of increased facilities for observations in the southern hemisphere, and the erection of large reflectors in both hemispheres for the extension of nearly every research to very faint stars. The provision of more assistants to aid in carrying on extensive routine observations would also secure a relatively great increase in the output of existing institutions. The twenty examples of work of a more or less routine character which are specified include determinations of the positions of all stars of ninth magnitude and brighter, proper motions of all stars down to magnitude 7·5, and parallaxes of all stars down to magnitude 6 and of specially selected fainter stars. Photometric observations of all stars to ninth magnitude, determinations of the radial velocities of all stars of magnitude 6 and brighter, and the more systematic observation of double and variable stars also form part of the suggested programme. One important outcome of such routine work would be the publication of a catalogue of all stars down to magnitude 6·5, giving for each the approximate position, proper motion, radial velocity, magnitude, spectrum, colour index, etc., which, it is suggested, should be brought up to date every three years. The possible services that astronomers can render in the war are under consideration.

THE TRANSLITERATION OF RUSSIAN.

THE transliteration of Oriental and other characters into Roman script naturally varies with the genius of the language into which the transliteration is made. The diversity of the resulting metamorphoses is bewildering, and any attempt to evolve cosmos out of this chaos should be welcome. As regards Russian names, with which we are immediately concerned, such an attempt has been made, for bibliographical purposes, by the Russians themselves, under the auspices of no less an authority than the Academy of Sciences of Petrograd.

To give some idea of the importance of this system of transliteration, the use of which has not yet extended beyond scientific circles, a brief relation of the circumstances which led to its inception may not be out of place. The beginning of this century witnessed the birth of a great scientific bibliography, published by the Royal Society of London under the title of "The International Catalogue of Scientific Literature." It is, in effect, a continuation of the Royal Society's "Catalogue of Scientific Papers," which is now in course of completion up to the close of last century. It is carried on, as its name implies, by international co-operation, and it is supported by almost the whole of the civilised world. One of its distinctive features being that it records the work of scientific investigators in their original language, the alphabetical arrangement of authors' names necessitated the adoption of a system of transliteration for each language which does not employ Roman script. The Petrograd Academy of Sciences thereupon applied itself to the problem of Russian names, and referred the matter to a special committee consisting of H. G. Zaleman (chairman), F. E. Korš, E. I. Lamanskij, N. A. Menšutkin, and A. A. Šachmatov. The result of its